

### ➤ General Description

The PAE1811EU is a 18V bi-directional TVS diode, utilizing leading monolithic silicon technology to provide fast re-sponse time low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive data and power line. The PAE1811EU complies with the IEC 61000-4-2 (ESD) with  $\pm 30$  kV air and  $\pm 30$  kV contact discharge. It is assembled into an ultra-small lead-free DFN1006-2 package. The small size and high ESD surge protection make PAE1811EU an ideal choice to protect cell phone, digital cameras, audio players and many other portable applications.

### ➤ Feature

- Protects one data or power line
- Ultra low leakage: nA level
- Operating voltage: 18V
- Low clamping voltage
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge:  $\pm 30$  kV
    - Contact discharge:  $\pm 30$  kV
  - IEC61000-4-5 (Lightning) 7A (8/20 $\mu$ s)
- RoHS Compliant

### ➤ DFN-1006



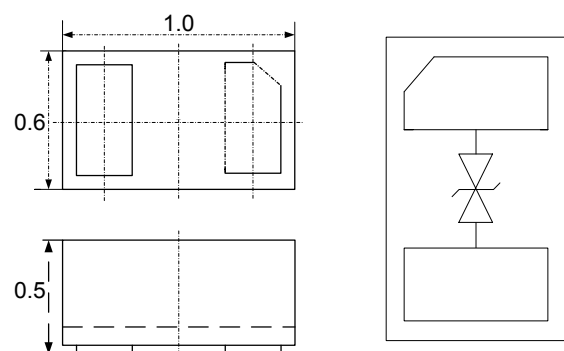
### ➤ Application

- Cellular Handsets and Accessories
- Personal Digital Assistants
- Notebooks and Handhelds
- Portable Instrumentation
- Digital Cameras
- Peripherals
- Audio Players

### ➤ Mechanical Characteristics

- Package: DFN1006-2
- Case Material: “Green” Molding Compound.
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram Below

### Dimensions and Pin Configuration



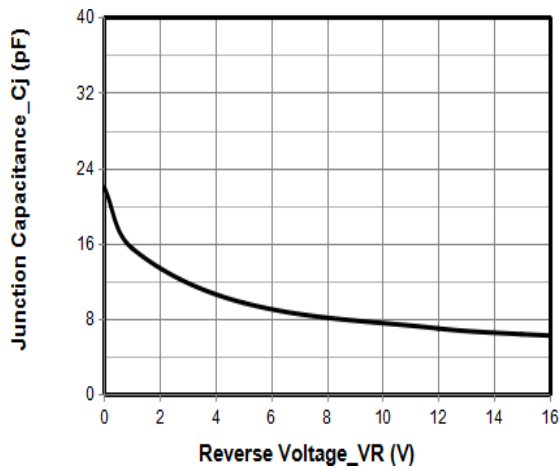
### ➤ Maximum Ratings (T<sub>A</sub>=25°C Unless otherwise specified)

| Parameter                       | Symbol           | Value       | Unit |
|---------------------------------|------------------|-------------|------|
| Peak Pulse Power (8/20μs)       | P <sub>pk</sub>  | 300         | W    |
| Peak Pulse Current (8/20μs)     | I <sub>pp</sub>  | 7           | A    |
| ESD per IEC 61000-4-2 (Air)     | V <sub>ESD</sub> | ±30         | kV   |
| ESD per IEC 61000-4-2 (Contact) |                  | ±30         |      |
| Operating Temperature Range     | T <sub>J</sub>   | -55 to +125 | °C   |
| Storage Temperature Range       | T <sub>stg</sub> | -55 to +150 | °C   |

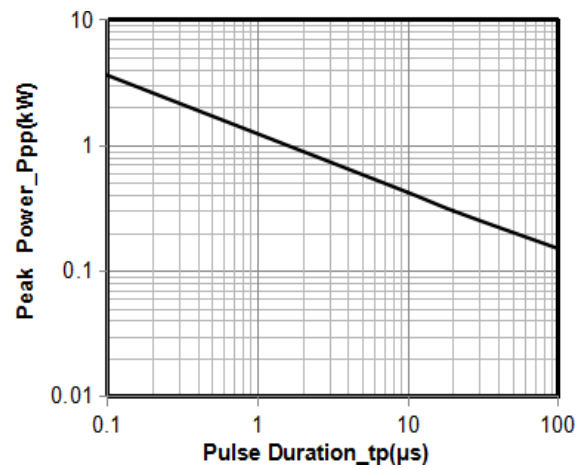
### ➤ Electrical Characteristics (T<sub>A</sub>=25°C Unless otherwise specified)

| Parameter               | Symbol           | Min | Typ | Max | Unit | Test Condition                        |
|-------------------------|------------------|-----|-----|-----|------|---------------------------------------|
| Reverse Working Voltage | V <sub>RWM</sub> |     |     | 18  | V    |                                       |
| Breakdown Voltage       | V <sub>BR</sub>  | 20  |     |     | V    | I <sub>T</sub> = 1mA                  |
| Reverse Leakage Current | I <sub>R</sub>   |     |     | 0.2 | μA   | V <sub>RWM</sub> = 18V                |
| Clamping Voltage        | V <sub>C</sub>   |     |     | 24  | V    | I <sub>PP</sub> = 1A (8 x 20μs pulse) |
| Clamping Voltage        | V <sub>C</sub>   |     |     | 42  | V    | I <sub>PP</sub> = 7A (8 x 20μs pulse) |
| Junction Capacitance    | C <sub>J</sub>   |     | 20  |     | pF   | V <sub>R</sub> = 0V, f = 1MHz         |

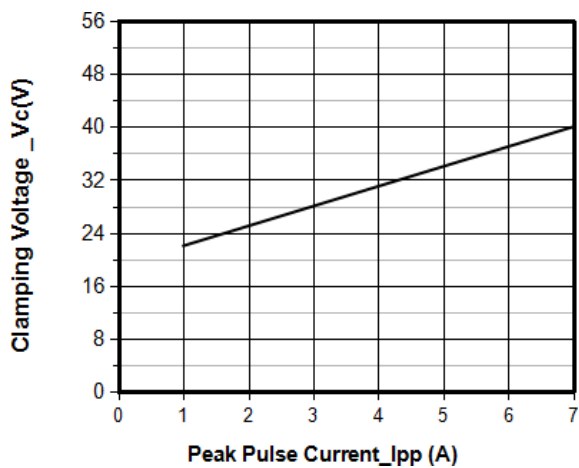
### ➤ Typical Characteristics



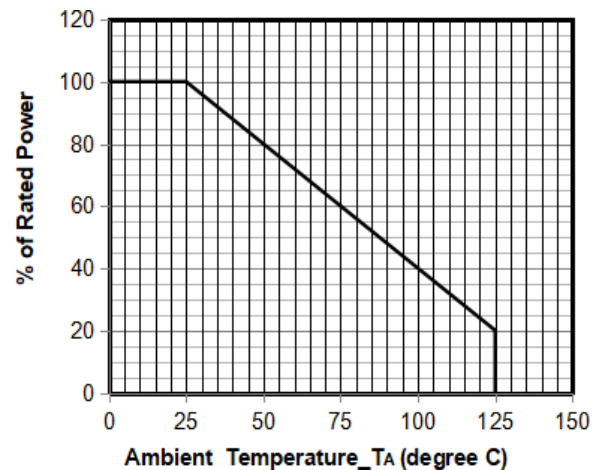
Junction Capacitance vs. Reverse Voltage



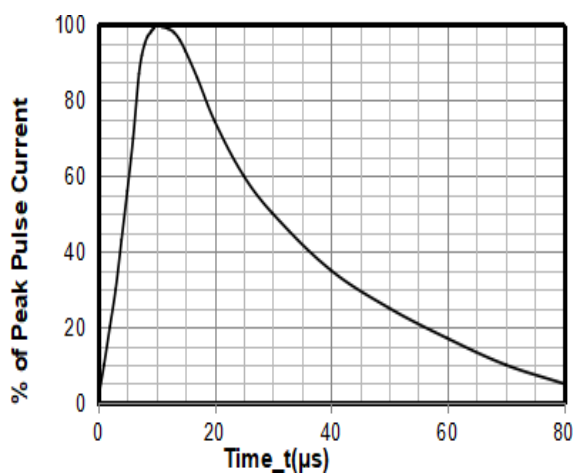
Peak Pulse Power vs. Pulse Time



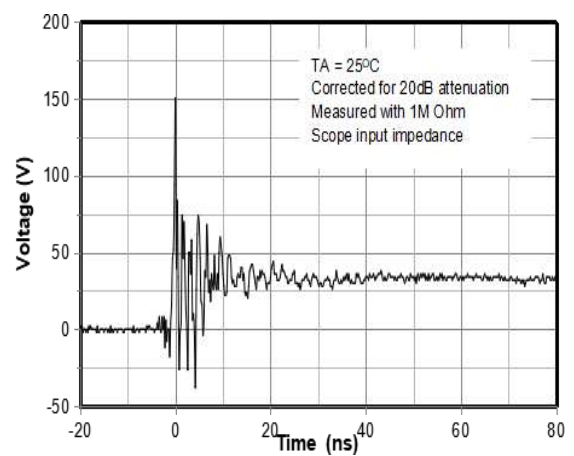
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



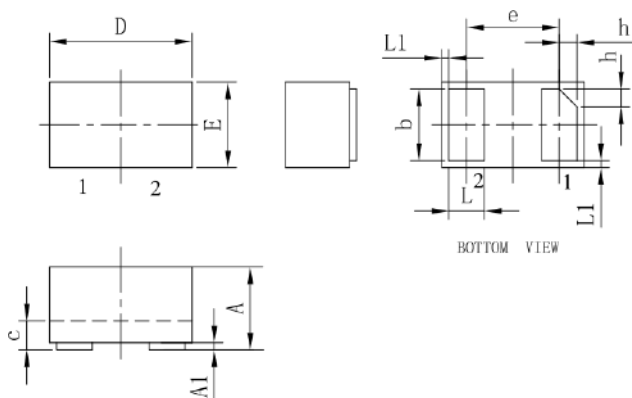
8 X 20 $\mu s$  Pulse Waveform



ESD Clamping Voltage

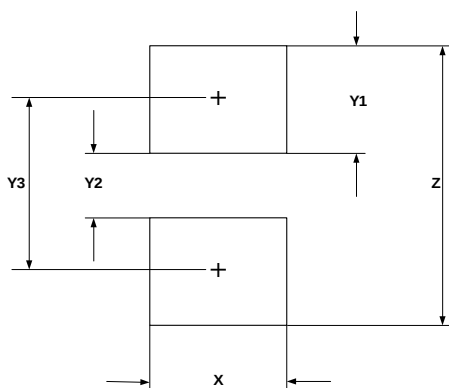
8 kV Contact per IEC61000-4-2

### ➤ Package Information (DFN1006)



| SYM | DIMENSIONS  |      |      |           |       |       |
|-----|-------------|------|------|-----------|-------|-------|
|     | MILLIMETERS |      |      | INCHES    |       |       |
|     | MIN         | NOM  | MAX  | MIN       | NOM   | MAX   |
| A   | 0.45        | 0.50 | 0.55 | 0.018     | 0.020 | 0.022 |
| A1  | 0.00        | 0.02 | 0.05 | 0.000     | 0.001 | 0.002 |
| b   | 0.45        | 0.50 | 0.55 | 0.018     | 0.020 | 0.022 |
| c   | 0.12        | 0.15 | 0.18 | 0.005     | 0.006 | 0.007 |
| D   | 0.95        | 1.00 | 1.05 | 0.037     | 0.039 | 0.041 |
| e   | 0.65 BSC    |      |      | 0.026 BSC |       |       |
| E   | 0.55        | 0.60 | 0.65 | 0.022     | 0.024 | 0.026 |
| L   | 0.20        | 0.25 | 0.30 | 0.008     | 0.010 | 0.012 |
| L1  | 0.05REF     |      |      | 0.002REF  |       |       |
| h   | 0.07        | 0.12 | 0.17 | 0.003     | 0.005 | 0.007 |

### Suggested Land Pattern



| SYM | DIMENSIONS  |        |
|-----|-------------|--------|
|     | MILLIMETERS | INCHES |
| X   | 0.60        | 0.024  |
| Y1  | 0.50        | 0.020  |
| Y2  | 0.30        | 0.012  |
| Y3  | 0.80        | 0.032  |
| Z   | 1.30        | 0.052  |

### ➤ Ordering Information

| Part Number | Description    | Quantity  |
|-------------|----------------|-----------|
| PAE1811EU   | DFN1006 / Reel | 10000 pcs |

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